



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,960	05/30/2002	John Frederick Graf	RD-29610	4041

6147 7590 05/18/2004

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
SCHENECTADY, NY 12301-0008

EXAMINER

GEISEL, KARA E

ART UNIT	PAPER NUMBER
----------	--------------

2877

DATE MAILED: 05/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,960

Applicant(s)

GRAF ET AL.

Examiner

Kara E Geisel

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-22, 26-36 and 40-47 is/are rejected.
- 7) ☒ Claim(s) 5-7, 23-25 and 37-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0602, 1003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statements

The information disclosure statements filed on June 11th, 2002 and October 20th, 2003 have been fully considered by the examiner.

Claim Objections

Claims 17-18, and 47 are objected to because of the following informalities: possibly typographical error.

In regards to claim 18, line 5, was "fake" supposed to be flake?

In regards to claims 17 and 47, lines 4 and 6, respectively, what are the applicants' "entering matching requirements" into? Clarification is required.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 8-20, 26-34, and 40-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Kettler et al. (USPN 5,929,998) as cited by applicant.

In regards to claims 1, 18 and 33, Kettler discloses a method, system and a computer-readable medium storing computer instructions for instructing a computer system for formulating a bi-directional color match (columns 8, lines 1-13), comprising a spectrophotometer (column 2, line 40) for obtaining a plurality of spectral measurements of a target bi-directional color (column 2, lines 37-45), and a computing unit for determining a combination of pigments, dyes and platelet-shaped pigments having a

plurality of predicted spectral measurements that match the plurality spectral measurements of the target bi-directional color (columns 2-3, lines 46-67 and 1-17, respectively).

In regards to claims 2, 19-20 and 34, the method and system further comprise a color database containing a plurality of optical parameters for each of the pigments, dyes and platelet-shaped pigments, wherein the unit obtains the plurality of optical parameters for each of the pigments, dyes and platelet-shaped pigments in the combination that matches the target bi-directional color (column 3, lines 1-5).

In regards to claims 8, 26-27 and 40, Kettler discloses a method, system and a computer-readable medium storing computer instructions for instructing a computer system for formulating a bi-directional color match from a set of previously used bi-directional color formulations (column 3, lines 6-27), comprising a spectrophotometer (column 2, line 40) for obtaining a plurality of spectral measurements of a target bi-directional color (column 2, lines 37-45), a color database containing a plurality of previously

used bi-directional color formulations and a plurality of optical parameters associated with each of the pigments, dyes and platelet-shaped pigments used in the bi-directional color formulations (column 2, lines 55-57), a computing unit for searching the set of previously used bi-directional color formulations for color formulas that approximates the target bi-directional color (column 2, lines 42-51), determining from the color formulas a formula that best matches the target bi-directional color (column 2, lines 46-51), and wherein the computing unit is also used for adapting concentrations of the pigments, dyes and platelet-shaped pigments in the color formula (column 3, lines 43-60).

In regards to claim 9, the method further comprises examining color plaques made from the adapted color formula and determining the acceptability of the formula (column 7, lines 43-46).

In regards to claims 10, 29 and 41, the method and system further comprise modifying the adapted color formula via the computing unit if the formula is unacceptable, the modifying comprising at least one of manual adjusting the concentrations of the pigments, dyes and platelet-shaped pigments in the formula, synthesizing a match with the target bi-directional color, or searching through the set of

Art Unit: 2877

previously used bi-directional color formulations to find an acceptable match (column 3, lines 17-27 and 43-60).

In regards to claims 11 and 42, the method and system further comprise receiving matching requirements for obtaining the set of color formulas that approximates the target bi-directional color, wherein the matching requirement comprise a plurality of optical parameters (column 2, lines 37-45).

In regards to claims 12, 30 and 44, the method and system further comprise storing the color formula having the acceptable match with the set of previously used bi-directional color formulations in the database (column 3, lines 6-12).

In regards to claims 13 and 31, Kettler discloses a method and color-formulation tool for formulating a bi-directional color match from a set of previously used bi-directional color formulations (column 3, lines 6-27), comprising a data acquisition component for obtaining a plurality of spectral

measurements of a target bi-directional color (column 2, lines 37-41), receiving matching requirements for obtaining color formulas that approximates the target bi-directional color (column 2, lines 42-45), a data extraction component for searching the set of previously used bi-directional color formulations according to the matching requirements (column 2, lines 46-51), determining from the set of color formulas a color formula that best matches the target bi-directional color according to the matching requirements (column 2, lines 46-51), a bi-directional color matching component for adapting the concentrations of the pigments, dyes and platelet-shaped pigments in the color formula (columns 2-3, lines 52-67 and 1-12, respectively), and determining if the adapted color formula matches the target bi-directional color (column 3, lines 13-27).

In regards to claim 14, the method further comprises examining color plaques made from the adapted color formula and determining the acceptability of the formula (column 7, lines 43-46).

In regards to claims 15, 32 and 45, the method and system further comprise modifying the adapted color formula if the formula is unacceptable, the modifying comprising at least one of manual

adjusting the concentrations of the pigments, dyes and platelet-shaped pigments in the formula, synthesizing a match with the target bi-directional color, or searching through the set of previously used bi-directional color formulations to find an acceptable match (column 3, lines 17-27 and 43-60).

In regards to claims 16 and 46, the method and system further comprise storing the color formula having the acceptable match with the set of previously used bi-directional color formulations (column 3, lines 6-12).

In regards to claims 17 and 47, Kettler discloses a method, and a computer-readable medium storing computer instructions for instructing a computer system for formulating a bi-directional color match from a set of previously used bi-directional color formulations (column 3, lines 6-27), comprising obtaining a plurality of spectral measurements of a target bi-directional color (column 2, lines 37-41), entering matching requirements for obtaining color formulas that approximates the target bi-directional color (column 2, lines 42-45), searching the set of previously used bi-directional color formulations according to the matching requirements (column 2, lines 46-51), determining from the set of color formulas a color formula that best matches the target bi-directional color according to the matching requirements (column 2, lines 46-51), adapting the concentrations of the pigments, dyes and platelet-shaped pigments in the color formula to improve the match with the target bi-directional color if the formula is unacceptable (columns 2-3, lines 52-67 and 1-12, respectively), determining if the adapted color formula matches the target bi-directional color (column 7, lines 43-46), and modifying the adapted color formula if the formula is unacceptable, the modifying comprising at least one of manual adjusting the concentrations of the pigments, dyes and platelet-shaped pigments in the color formula, synthesizing a match with the target bi-directional color, or searching through the set of previously used bi-directional color formulations until there is an acceptable match (column 3, lines 17-27 and 43-60).

In regards to claim 28, the computing unit further determines if the adapted color formula matches the target bi-directional color (column 3, lines 13-27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-4, 21-22, and 35-36 rejected under 35 U.S.C. 103(a) as being unpatentable over Kettler et al. (USPN 5,929,998), as cited by applicant, in view of Asaba et al. (USPN 6,249,751).

In regards to claims 3-4, 21-22, and 35-36 the method and system for formulating a bi-directional color match is disclosed above. It is not disclosed to apply the plurality of optical parameters to a single particle scattering algorithm, which uses Mie scattering, and a Monte Carlo method based on geometric optics ray-tracing.

Asaba discloses a method of measuring reflectance using a gonio-spectrophotometer to determine the color of a bi-directional paint (column 12, lines 10-50), which is the same type of spectrophotometer used by Kettler (Kettler column 2, line 40). In Asaba's method, fewer measurements have to be taken in order to determine a color curve, and therefore less space in a computer has to be used to hold the measurements, because an algorithm is applied to the measurements taken in order to interpolate the rest

of the data (columns 10-11, lines 56-67 and 1-64, respectively). The algorithm applied is a single particle scattering algorithm, which uses Mie scattering, and a Monte Carlo method based on geometric optics ray-tracing (column 11, lines 10-64). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a single particle scattering algorithm which uses Mie scattering and a Monte Carlo method based on geometric optics ray-tracing in Kettler's method and system in order to save space in the computer memory, and in order to be able to determine the bi-directional color with less measurements.

Allowable Subject Matter

Claims 5-7, 23-25, and 37-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 5, 23, and 37, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method, system, or a computer readable medium storing computer instructions for instructing a computer system for formulating a bi-directional color match comprising applying output from the single particle scattering algorithm to a multiple scattering algorithm, in combination with the rest of the limitations of claims 5, 23, and 37.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Marcus et al. (USPN 5,321,472), Kettler et al. (USPN 6,064,487), Osumi et al. (USPN 6,362,885), Numata et al. (USPN 6,539,325), and McClanahan (USPN 6,714,924).

Marcus discloses a method and system for formulating a bi-directional color match comprising obtaining a plurality of spectral measurement of a target color and determining a combination of pigments

dyes and platelet shaped pigments having a plurality of predicted spectral measurements that match the plurality spectral measurement of the target color.

Kettler discloses a method, system and a computer-readable medium storing computer instructions for instructing a computer system for formulating a bi-directional color match, comprising a spectrophotometer for obtaining a plurality of spectral measurements of a target bi-directional color, and a computing unit for determining a combination of pigments, dyes and platelet-shaped pigments having a plurality of predicted spectral measurements that match the plurality spectral measurements of the target bi-directional color.

Osumi discloses a method and system for formulating a bi-directional color match comprising obtaining a plurality of spectral measurement of a target color and determining a combination of pigments dyes and platelet shaped pigments having a plurality of predicted spectral measurements that match the plurality spectral measurement of the target color.

Numata discloses a method and system for formulating a bi-directional color match comprising obtaining a plurality of spectral measurement of a target color and determining a combination of pigments dyes and platelet shaped pigments having a plurality of predicted spectral measurements that match the plurality spectral measurement of the target color.

McClanahan discloses a method and system for formulating a bi-directional color match comprising obtaining a plurality of spectral measurement of a target color and determining a combination of pigments dyes and platelet shaped pigments having a plurality of predicted spectral measurements that match the plurality spectral measurement of the target color.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is 571 272 2416. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

Art Unit: 2877

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571 272 2415. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9306 for regular communications and 703 872 9306 for After Final communications. For inquiries of a general nature, the Customer Service fax number is 703 872 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1782.


F.L. Evans
Primary Examiner
Art Unit 2877

K.G.
KEG